



Farm and Weather Summary

Nick Howell—farm superintendent, Horticulture Research Station

Farm Comments

Staffing. Staffing continued with Brandon Carpenter and Chad Arnold as agriculture specialists, Jeff Braland as equipment operator, and Randall Cass as bee specialist

Graduate students. The station-funded graduate assistants in 2021 were Olivia Meyer, who is testing the usefulness of precision air blast sprayer technology in apple production, and Taylor Mauch, who is studying pepper production using biochar.

Students. Jenna Errthum, Horticulture and Global Resources, completed the Food Crop Production Enterprise learning experience in 2021. This learning experience gives the student the opportunity to manage a food production enterprise from planting through harvest. This included choosing and growing crops, then marketing them on the station's FoodLo.CALS website. Jenna grew a diverse variety of vegetables, including several tomato varieties, kale, eggplant, kohlrabi, cabbage, beets, and many other vegetable crops and herbs. Jaden Ahlrichs, Global Resources, also completed a learning experience. His project was to grow onions and peppers in bulk for Iowa State University Dining. With a goal of 5,000 lbs. of onions and 7,000 lbs. of peppers, Jaden learned how to grow horticulture food crops at a large scale and market these to institutions.

Research. In 2021, the station hosted 66 projects with 20 investigators involved. The range of projects was diverse. Apples, grapes, cantaloupe, winter squash, and soybean were grown for research. Ornamental crops, such as turfgrass and shade trees, also were used for research purposes. Projects involving bees, wasps, tree swallows, turtles, and fish added more research diversity.

One new project in 2021 under the direction of Lisa Schulte Moore, professor in Natural Resource Ecology and Management, is looking at the filtering capacity of the prairie ecosystem. Using manure sludge from the animal science farms, the goal is to see how well prairies filter and prevent potential surface and groundwater contamination from feedlot operations.

Bulk Production. Several bulk production projects were completed in 2021, the most notable was sod production for ISU's Jack Trice Stadium. This six-acre project included the installation of in-ground irrigation and the application of three inches of sand before seeding mid-May. In spring 2022, the sod is scheduled to be cut, transported, and laid at ISU Jack Trice Stadium. The goal is to have the sod established in the stadium for the 2022 football season.

Another project of note was honey production. Started in 2020 at the station, the hives have been increased from 20 to 50 hives in 2021. The 30 new hives were placed on prairie strips. The prairie strips are planted in waterways and marginal areas set aside by farmers. The purpose of the prairie strips is to reduce pollutants entering into lowa groundwater and streams. The addition of hives to these acres provides added value. The high quality 'strips' honey is darker in color and has a caramel flavor. The apiaries produced 1,200 lbs. of honey in 2021.

Other bulk crops grown in 2021 included peppers, onions, pumpkins, apples, and grapes. All were grown for intramural use.

Landscape and infrastructure. 2021 was a year of rebuilding from the 2020 derecho. Three new 30' x 90' high tunnels were constructed. This was to replace two large and three small tunnels destroyed by the high winds. Remaining work is the repair of two additional high tunnels and the reconstruction of a large hay hoop.

An 850-tree tall-spindle apple orchard was established in 2021. Originally part of a planned orchard expansion, this orchard will help replace trees damaged by the high winds. In addition, 1,000 new trees were ordered in 2021 and will arrive in 2023. This orchard will primarily consist of ISU varieties and those lost in the storm.

A new farm-wide Wi-Fi system was under construction in 2021. The station crew installed four building masts and five 20-ft. towers equipped with repeaters. This project will be completed in the spring of 2022.

Industry and the public. The station had a busy field day season. In addition to the annual fruit and vegetable and turfgrass field days, the station hosted three new events. First was the Diversity in Iowa Field Day. This classroom activity provided the opportunity for graduate students to learn how to manage a learning event and show off their research to faculty and fellow graduate students. A second new event was the Wine Grape Field Day. This program provided grape growers and wine makers the opportunity to learn about growing techniques to enhance grape quality. They also looked at maturity testing techniques. The final field day of the season was the statewide FFA soil-judging contest. A total of 180 high school students came to the station and judged the characteristics of soil in four pits located around the farm. This provided the students the opportunity to look at different soil types. When the student judging was completed, the hosts reviewed the pits with the FFA students and gave awards to the winning teams. The Brokaw FFA team from Clarinda won the competition.

In addition to field days, the station hosted 18 tours and other meetings. By the end of the season, the station had 776 visitors.

Weather Comments

Winter 2020-2021. Below normal precipitation and temperatures were experienced during the period. An early spring freeze damaged the apple crop. Apple and grape pruning was completed in a timely manner during the period.

Spring 2021. Precipitation was below normal. Planting of vegetable and bulk oat crops was uninterrupted. Relatively normal highs and lows were experienced in April and May.

Summer 2021. Below normal precipitation allowed late spring planting projects to be completed in June. Dry and hot conditions continued into August, resulting in heavy crop irrigation. Lake water levels dropped 36 inches during this period.

Fall 2021. Above normal precipitation and above normal highs were experienced. Lake water levels rose 25 inches as a result of the late season rain. Crop harvest was unaffected by the weather.

Acknowledgements

Thanks to the farm crew Brandon Carpenter, Chad Arnold, Randall Cass, Jeff Braland, Thomas Gould, and also graduate students, Taylor Mauch and Olivia Meyer, for their hard work. Thanks also to student workers Jenna Errthum, Jaden Alhrichs, Grant Thilges, Mckenzie Stewart, and Zac Tietjens, and all other workers, for the excellent job they did this past season.

The ISU Horticulture Research Station staff would like to thank Steve Jonas, ISU Research Farms, for his leadership in the construction of three new high tunnels built to replace the tunnels lost in last year's derecho.

Table 1. Horticulture Research Station monthly rainfall and average temperatures for 2021.

Month	Rainfall inches		Temperature				Days 90° or above
	2021	Deviation from normal	High 2021	Deviation from normal	Low 2021	Deviation from normal	
March	1.83	-0.3	53.6	+5.2	32	+3.5	0
April	0.49	-3.4	63.4	+0.3	39.4	-0.3	0
May	2.51	-2.4	70.4	+0.4	49.5	-6.7	0
June	1.68	-2.8	88.0	+1.6	62.0	-0.8	14
July	2.18	-1.7	86.0	-0.3	62.8	-3.3	10
August	4.15	-0.7	86.1	+2.0	62.1	-1.6	6
September	3.59	+0.3	82.3	+3.3	53.4	-1.7	3
October	4.72	+2.1	65.9	+1.2	44.7	+2.7	0
Total	21.15	-8.9					33